REMARKS

Claims 1-11 are pending in the present application. In the Office action of March 13, 2008, claims 1, 2 and 4-11 were rejected under 35 U.S.C. § 102(b) as being unpatentable over Landrum 5,617,771. Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Landrum in view of Franks 4,794,826. Applicants have amended claims 1 and 4, and have canceled claims 2, 3 and 6.

Landrum discloses an auto cycle pump that may be used as an automatic hydraulic torque wrench fastener tightening system. In order to do so, Landrum discloses a three-step methodology that a hydraulic torque wrench operator ("operator") must follow: (1) a calibration step (col. 6, lines 40-67 - col. 7, lines 1-14); (2) an automatic advance/retract cycle of the tool or cylinder (col. 7, lines 14-60); and (3) a manual finish mode (col. 7, lines 61-67 - col. 8, lines 1-25). During the calibration step and the manual finish mode, the operator must rely on actually seeing the tool stop moving to know when to release the pendant switch from the advance position (col. 7, lines 12-14; col. 8 lines 4-7). This three-step process also requires the operator to press, hold, and release the pendant switch multiple times to automatically tighten a fastener. Not only does the claimed invention overcome these drawbacks, but several differences also exist between the claimed invention and Landrum.

First, the calculation method for determining when the system will switch between the advance and retract strokes is different in the claimed invention than in Landrum. The system disclosed in Landrum uses flow measurements in order to determine when to switch between the advance and retract strokes of the cylinder (col. 7, lines 19-48). However, the system in the claimed invention uses pressure measurements in order to determine when to switch between the advance and retract strokes of the cylinder. Claim 1, as amended, states that "the system alternately: (a) applies a pressure to the cylinder to advance the cylinder until a programmable set pressure is reached; and (b) applies a pressure to the cylinder to retract the cylinder until a set pressure is reached ..." (Emphasis added).

Second, Landrum does not disclose or suggest any methodology to the effect that the cycle time between the advance and retract strokes of the cylinder will be shorter in duration when the hydraulic torque wrench has reached a set pressure. Claim 1, as amended, discloses that once a desired torque of the fastener is reached, the system will continue to apply pressure to

advance and retract the cylinder. Applicants have amended claim 1 by adding the word "continues" to emphasize this difference from Landrum, that even after the system has reached the desired torque, the system will continue to alternate between the advance and the retract strokes. Landrum only teaches that once a set pressure (desired torque) is reached, a PLC sends a signal that shuts off the electric motor that controls the hydraulic pump (col. 7, lines 49-60). Then the operator is ready to begin the manual process described as the finish mode (col. 7, lines 63-65).

Applicants have also amended claim 1 to show that the operator need not rely only on visual senses, or rely on visual senses at all, when performing the automatic hydraulic tightening process. Rather, the operator may rely on the audible differences in the alternation cycle time between the advance and retract strokes in order to determine that a desired torque of the fastener has been reached. As described in the specification of the application, a need to see the tool move may require more personnel than just one operator. Specification, ¶ [0004].

The operator's ability to rely on an auditory warning to know when the desired torque on the fastener has been reached is another reason that claim 1, as amended, is patentably distinct over Landrum. The Office action cited that claim 3, which Applicants have canceled due to amending claim 1, was obvious under Landrum in view of Franks because Franks discloses a methodology that indicates a desired torque of a fastener has been reached by an audible transmission. Applicants request clarification of what is referred upon in Franks to support this position. Franks discloses a methodology that includes a sound pulse generator that transmits a sound longitudinally through a bolt and then receives the pulse after it bounces off the end of the bolt and returns through the length of the bolt (col. 3, lines 41-48). The sound pulse generator measures the length of time taken by the sound to travel through the bolt and to return in order to calculate the elongation of the bolt. Id. However, as previously described, the auditory methodology disclosed in the claimed invention involves the operator hearing a shorter time duration for the switch from the advance to retract strokes of the hydraulic torque wrench. Franks does not teach or suggest any such auditory methodology that provides an audible indication by an operator that the fastener has reached the desired torque.

Furthermore, the claimed invention overcomes the drawback in Landrum that requires the operator to press, hold, and release the pendant switch multiple times when performing the

calibration and finish mode steps of the three step automatic cycle for tightening a fastener (col. 6, lines 45-49; col. 7 lines 65-66). As the specification noted, it is tedious and time consuming for an operator to perform manual processes in a hydraulic torque wrench fastening system. Specification, ¶ [0004]. In the claimed invention, the operator only needs to press and hold the advance button on the pendant switch once. As stated in the specification, "[t]he end result is a fastener that reaches a programmable torque set point in a minimal amount of time without continual manual operation of the advance and retract cycles." Specification, ¶ [0006].

For at least the aforementioned reasons, independent claim 1 of the present invention, as amended, is patentably distinct from Landrum and Franks. Accordingly, dependant claims 2, 4, 5 and 7-11 are in condition for allowance pursuant to the chain of dependency. However, claims 2 and 5 also contain distinct differences from Landrum other than their dependence upon claim 1.

With respect to dependent claim 2, these limitations have been written into claim 1. Landrum does not disclose any methodology to the effect that the retract cycle of the hydraulic torque wrench will terminate when a set pressure is reached. Rather, Landrum teaches that the switch between the advance and retract strokes, and therefore the termination of the retract stroke, is governed by flow measurements (col. 7, lines 19-48).

With respect to dependent claim 5, Landrum does not disclose any methodology that suggests that the motor that drives the pump of the system may continue to be on after the fastener reaches the desired torque. Rather, Landrum discloses that the automatic cycle between the advance and retract sequence continues "until a preset pressure set at the combined pressure switch and regulator ... is met." (col. 7, lines 49-54). As claim 5 states, the claimed invention allows the motor to continue to run for a "certain time period following reaching the desired torque," and is not shut off immediately when the fastener reaches the desired torque.

Finally, in regards to dependent claim 4, Applicants have amended the claim only in order to clarify the invention by stating that the operator may also receive a visual indication, in addition to an audible indication as claimed in claim 1, when the fastener has reached the desired torque.

It is respectfully submitted that this amendment places this application into condition for allowance. If not, a telephone interview is requested so please call the undersigned to set one up.

No fees are believed due for filing this response, however, please charge any fees that may be due, or credit any overpayment, to Deposit Account No. 17-0055.

Respectfully submitted,

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